WHAT IS CLAIMED IS:

1.   A method of authenticating a resource reservation message sent between a source

node and a destination node in a network, comprising:

        constructing an outgoing resource reservation message, the message comprising a

plurality of objects ;

5   selecting multiple objects of the message;

        constructing a list identifying each of the selected multiple objects;

        calculating a message integrity value using the selected multiple objects of the

message;

        inserting the calculated integrity value and the constructed list in the message;

10   sending the message, from the source node, across a network to the destination

node; and

        authenticating the multiple objects of the message at the destination node using

the message integrity value and the constructed list.

2.   The method of claim 1, further comprising:

        inserting an identifier, that serves to identify either the source node or the

destination node, in the message.

3.   The method of claim 2, wherein calculating the message integrity value further

uses the identifier.

4.   The method of claim 2, wherein the identifier comprises a network address associated with at least one of the source node or the destination node.

5.   The method of claim 4, wherein calculating the message integrity value further uses the network address.

6.   The method of claim 1, wherein the list comprises an ordered list, and wherein calculating the message integrity value comprises using the selected multiple objects in an order specified by the ordered list.

7.   The method of claim 1, wherein each of the plurality of objects comprises a field of the message.

8.   The method of claim 1, wherein the message comprises at least one of a packet, a cell, a datagram, a fragment of a packet, a fragment of a datagram, and a fragment of a cell.

9.   The method of claim 1, wherein the message comprises a Resource Reservation Protocol (RSVP) path message.

10.   The method of claim 1, wherein the message comprises a Resource Reservation Protocol (RSVP) reservation request message.

11.   The method of claim 1, wherein calculating the message integrity value comprises using a cryptographic algorithm.

12.   The method of claim 11, wherein the cryptographic algorithm comprises at least one of an MD5 message digest algorithm, a secure hash algorithm (SHS), a RIPEMD-160 algorithm, a message authentication code (MAC) algorithm, a Cyclical Redundancy Checking (CRC) algorithm, a private key encryption algorithm, and a public encryption

5   key algorithm.

13.   The method of claim 1, further comprising:

extracting, at the destination node, the list identifying each of the selected multiple objects from the message.

14.   The method of claim 13, wherein authenticating the multiple objects of the message at the destination node using the message integrity value comprises:

authenticating the multiple objects of the message specified by the extracted list .

15.   The method of claim 1, wherein the message is used by routers in the network for establishing a desired level of quality of service for transmissions between the source node and the destination node.

16.   A system for performing resource reservation authentication in a network, comprising:

a source node configured to:

    construct an outgoing resource reservation message, the message

5   comprising a plurality of objects,

    select multiple objects of the message,

    construct a list identifying each of the selected multiple objects,

    calculate a message integrity value using the selected multiple objects and

the constructed list,

10   insert the calculated message integrity value and the constructed list in the

message, and

    send the message across the network; and

a destination node configured to:

    receive the message, and

15   authenticate the message using the message integrity value and the

constructed list.

17.   A network device, comprising:

a memory configured to store instructions; and

a processor configured to execute the instructions in the memory to:

    construct an outgoing resource reservation message, the message

5   comprising a plurality of objects ,

    select multiple objects of the message,

    construct a list identifying each of the selected multiple objects,

calculate a message integrity value using the selected multiple objects of the message,

10   insert the message integrity value and the constructed list into the message, and

forward the message across a network to a destination node for authentication at the destination node using the inserted message integrity value and the constructed list.

18.   The device of claim 17, wherein the list comprises an ordered list, and wherein calculating the message integrity value comprises using the selected multiple objects in an order specified by the ordered list.

19.   The device of claim 17, wherein each of the plurality of objects comprises a field of the message.

20.   The device of claim 17, wherein the message comprises at least one of a packet, a cell, a datagram, a fragment of a packet, a fragment of a datagram, and a fragment of a cell.

21.   The device of claim 17, wherein the message comprises a Resource Reservation Protocol (RSVP) path message.

22.   The device of claim 17, wherein the message comprises a Resource Reservation Protocol (RSVP) reservation request message.

23.   The device of claim 17, wherein the message integrity value is calculated using a cryptographic algorithm.

24.   The device of claim 23, wherein the cryptographic algorithm comprises at least one of a MD5 message digest algorithm, a secure hash algorithm (SHS), a RIPEMD-160 algorithm, a message authentication code (MAC) algorithm, a Cyclical Redundancy Checking (CRC) algorithm, a private key encryption algorithm, and a public encryption
5   key algorithm.

25.   The device of claim 17, wherein the message is used by routers in the network for establishing a desired level of quality of service for transmissions between the network device and the destination node.

26.   A method of performing resource reservation authentication between a source node and a destination node in a network, comprising:

    constructing an outgoing resource reservation message;

    determining, at the source node, an authentication value using at least a portion of
5   the message;

    inserting the authentication value in the message;

forwarding the message from the source node to the destination node across the

network; and

authenticating the message at the destination node using the authentication value.

27.   The method of claim 26, wherein the outgoing resource reservation message

comprises at least one of a packet, a cell, a datagram, a fragment of a packet, a fragment

of a datagram, and a fragment of a cell.

28.   The method of claim 26, wherein the message comprises a Resource Reservation

Protocol (RSVP) path message.

29.   The method of claim 26, wherein the message comprises a Resource Reservation

Protocol (RSVP) reservation request message.

30.   The method of claim 26, wherein the authentication value is determined using a

cryptographic algorithm.

31.   The method of claim 30, wherein the cryptographic algorithm comprises at least

one of a MD5 message digest algorithm, a secure hash algorithm (SHS), a RIPEMD-160

algorithm, a message authentication code (MAC) algorithm, a Cyclical Redundancy

Checking (CRC) algorithm, a private key encryption algorithm, and a public encryption

5   key algorithm.

32.   The method of claim 26, wherein the resource reservation message is used by

network devices in the network for establishing a desired level of quality of service for

transmissions between the source node and the destination node.

33.   A network device, comprising:

a memory configured to store instructions; and

a processor configured to execute the instructions in the memory to:

construct an outgoing resource reservation message,

5   determine an authentication value using at least a portion of the outgoing

message and a cryptographic algorithm,

identify a destination node for the message,

insert the authentication value in the message, and

send the message across a network to the destination node for

10   authentication at the destination node using the authentication value.

34.   The device of claim 33, wherein the message comprises a Resource Reservation

Protocol (RSVP) path message.

35.   The device of claim 33, wherein the message comprises a Resource Reservation

Protocol (RSVP) reservation request message.

36.   The device of claim 33, wherein the cryptographic algorithm comprises at least

one of a MD5 message digest algorithm, a secure hash algorithm (SHS), a RIPEMD-160

algorithm, a message authentication code (MAC) algorithm, a Cyclical Redundancy

Checking (CRC) algorithm, a private key encryption algorithm, and a public encryption

5 key algorithm.

37.   The device of claim 33, wherein the message is used by routers in the packet-

switched network for establishing a desired level of quality of service for transmissions

between the network device and the destination node.

38.   A system for performing resource reservation authentication between a source

node and a destination node in a network, the system comprising:

        means for constructing a resource reservation message;

        means for generating, at the source node, an authentication value using at least a

5 portion of the message;

        means for inserting the authentication value in the message;

        means for transmitting the message from the source node to the destination node

across the network; and

        means for authenticating the message at the destination node using the

10 authentication value.